University Coal Research Historically Black Colleges and Universities and Other Minority Institutions Contractors Review Meeting

June 3-4, 2003

Preliminary Agenda

Tuesday, June 3, 2003 – Session A

7:00 - 8:00 am	**Registration and Continental Breakfast**
8:00 - 9:00 am	Opening Session Keynote Speaker: *Gerald H. Groenewold*, University of North Dakota Energy & Environmental Research Center
9:10 - 9:45 am	In Situ Infrared Study of Photo-Catalytic Synthesis of Oxygenates and Hydrocarbons from CO_2/H_2O over Pd and Cu-Based Catalysts *Steven Chuang*, University of Akron
9:45 -10:20 am	Enhancing the Atomic-Level Understanding of CO_2 Mineral Sequestration Mechanisms via Advanced Computational Modeling *Andrew V.G. Chizmeshya*, Arizona State University
10:20 - 10:35 am	**Break**
10:35 - 11:10 am	Carbon Dioxide Sequestration by Mechanochemical Carbonation of Mineral Silicates *Michael G. Nelson*, University of Utah
11:10 - 11:45 am	Reaction Mechanism of Magnesium Silicates with Carbon Dioxide in Microwave Fields *William B. White*, Pennsylvania State University
11:45 - 1:00 pm	**Lunch (on your own)**
1:00 - 1:35 pm	Simultaneous Mechanical and Heat Activation: A New Route to Enhance Serpentine Carbonation Reactivity and Lower CO_2 Mineral Sequestration Process Cost *Michael J. McKelvy*, Arizona State University
1:35 - 2:10 pm	Reforming of Liquid Hydrocarbons in a Novel Hydrogen-Selective Membrane-Based Fuel Processor *Shamsuddin Ilias*, North Carolina A&T State University
2:10 - 2:45 pm	Inorganic Membranes for CO_2/N_2 Separation *William J. DeSisto*, University of Maine
2:45 - 3:20 pm	Development of a Catalyst/Sorbent for Methane Reforming *Brent H. Shanks*, Iowa State University
3:30 - 5:00 pm	Poster Session and Light Refreshments

Tuesday, June 3, 2003 – Session B

7:00 - 8:00 am	**Registration and Continental Breakfast**
8:00 - 9:00 am	Opening Session Keynote Speaker: *Gerald H. Groenewold*, University of North Dakota Energy & Environmental Research Center
9:10 - 9:45 am	Attrition Resistant Ion-Based Catalysts for FT SBCRs *Adeyinka A. Adeyiga*, Hampton University
9:45 - 10:20 am	Modeling of Syngas Reactions and Hydrogen Generation Over Sulfides *Kamil Klier*, Lehigh University
10:20 - 10:35 am	**Break**
10:35 - 11:10 am	Reformulation of Coal-Derived Transportation Fuels: Selective Oxidation of Carbon Monoxide on Metal Foam Catalysts *James Spivey*, Louisiana State University
11:10 - 11:45 am	A Novel Concept for Reducing Water Usage & Increasing Efficiency in Power Generation *Shiao-Hung Chiang*, University of Pittsburgh
11:45 - 1:00 pm	**Lunch (on your own)**
1:00 - 1:35 pm	Advanced Heterogeneous Reburn Fuel from Coal & Hog Manure *Melanie D. Jensen*, University of North Dakota
1:35 - 2:10 pm	Enhanced Coal Reburning in Oxidizing Environments *Eric G. Eddings*, University of Utah
2:10 - 2:45 pm	Combined Microbial Surfactant-Polymer System for Improved Oil Mobilitity and Comformance Control *Jorge F. Gabitto*, Prairie View A&M University
2:45 - 3:20 pm	Characterization of Heterogeneities at the Reservoir Scale: Spatial Distribution and Influence on Fluid Flow *Michael Gross*, Florida International University
3:30 - 5:00 pm	Poster Session and Light Refreshments

Wednesday, June 4, 2003 – Session A

7:30 - 8:00 am	**Continental Breakfast**
8:00 - 8:35 am	Ultrasensitive HighTemperature Selective Gas Detection Using Piezoelectric Microcantilevers *Wan Y. Shih*, Drexel University
8:35 - 9:10 am	Development of Advanced Solid State Sensor Technology Base for Vision 21 Systems *Chater D. Stinespring*, West Virginia University
9:10 - 9:45 am	Feasibility of a SOFC Stack Integrated Optical Chemical Sensor *Michael Carpenter*, University at Albany
9:45 - 10:20 am	A Novel Integrated Stack Approach for Realizing Mechanically Robust Solid Oxide Fuel Cells *Scott A. Barnett*, Northwestern University
10:20 am	**Adjourn**

Wednesday, June 4, 2003 – Session B

7:30 - 8:00 am	**Continental Breakfast**
8:00 - 8:35 am	Novel Nanocomposite Membrane Structures of H_2 Separations *Benny Freeman*, North Carolina State University
8:35 - 9:10 am	Nanostructured Ceramics and Composites for Refractory Applications in Coal Gasification *Paul Brown*, Pennsylvania State University
9:10 - 9:45 am	Dynamic Testing of Gasifier Refractories *Michael Mann*, University of North Dakota
9:45 - 10:20 am	Novel Electrode Materials for Low-Temperature Solid Oxide Fuel Cells (SOFCs) *Meilin Liu*, Georgia Institute of Technology
10:20 - 10:35 am	**Break**
10:35 - 11:10 am	Advanced Heat Exchangers Using Tunable NanoscaleMolecular Assembly *Kwang J. Kim*, University of Nevada
11:10 - 11:45 am	Mercury Oxidation via Catalytic Barrier Filters *Wayne S. Seames*, University of North Dakota
11:45 - 12:20 pm	Engineered Particulates for CoFiring of Diverse Feedstocks *Joseph J. McCarthy*, University of Pittsburgh
12:20 pm	**Adjourn**

Poster Presentations of Project Accomplishments

Integrating P-Wave and S-Wave Seismic Data to Improve Characterization of Oil Reservoirs - *Innocent Aluka*, Prairie View A&M University

Synthesis of Sulfur Based Water Treatment Agent from SO_2 Waste - *Robert C. Brown*, Iowa State University

High Efficiency Desulfurization of Synthesis Gas: III - *Douglas P. Harrison*, Louisiana State University

Kinetics of Direct Oxidation of H_2S in Coal Gas to Elemental Sulfur - *Kyung C. Kwon*, Tuskegee University

Water-Gas Shift Hydrogen Separation Process - *Maria Flytzani-Stephanopoulos*, Tufts University

Proton-Conducting Dense Ceramic Membranes for Hydrogen Separation Membranes Applications - *Y.S. Lin*, University of Cincinnati

Fundamental Investigation of Fuel Transformations in Advanced Coal Combustion and Gasification Technologies - *Robert H. Hurt*, Brown University

Coal Particle Flow Patterns for O_2 Enriched Low NO_x Burners - *Jennifer Sinclair Curtis*, Purdue University

Sulfur Reduction in Gasoline and Diesel Fuels by Extraction/Adsorption of Refractory Dibenzothiophenes - *Robert J. Angelici*, Iowa State University

Deep Desulfurization of Diesel Fuels by a Novel Integrated Approach - *Xiaoliang Ma*, Pennsylvania State University

A New Class of Mesoporous Catalysts for Applications in Petroleum Refining - *Conrad Ingram*, Clark Atlanta University

Novel Preparation and Magneto Chemical Characterization of Nano-Particle Mixed Alcohol Catalysts - *Seetala V. Naidu*, Grambling State University

Improved Iron Catalysts for Slurry Phase Fischer-Tropsch Synthesis - *Dragomir B. Bukur*, Texas A&M University

Flux Enhancement in Cross Flow Membrane Filtration: Fouling and Its Minimization By Flow Reversal - *Shamsuddin Ilias*, North Carolina A&T State University

Abstracts of Project Accomplishments

Heterogeneous Reburning by Mixed Fuels - *WeiYin Chen*, University of Mississippi

Intelligent Monitoring System with High Temperature Distributed Fiberoptic Sensor for Power Plant Combustion Processes - *Kwang Y. Lee*, Pennsylvania State University

Multifunctional (NOx/CO/O_2) SolidState Sensor for Coal Combustion Control - *Eric D. Wachsman*, University of Florida

Elevated Temperature Sensors for OnLine Critical Equipment Health Monitoring - *James R. Sebastian*, University of Dayton

Development of All SolidState Sensors for Measurement of Nitric Oxide & Ammonia Concentrations by Optical Absorption in ParticleLaden Combustion Exhaust Streams - *Robert P. Lucht*, Texas A&M University

Highly Selective H_2 Separation Zeolite Membranes for Coal Gasification Membrane Reactor Applications - *Richard D. Noble*, University of Colorado

Innovative Fresh Water Production Process for Fossil Fuels Plants - *James Klausner*, University of Florida

Ab Initio Studies of Coke Formation on Ni Catalysts During Methane Reforming - *David S. Sholl*, Carnegie Mellon University

Material System for Intermediate Temperature Solid Oxide Fuel Cell - *Uday Pal*, Boston University

Kinetics of Slurry Phase FischerTropsch Sythesis - *Dragomir Bukur*, Texas A&M University

Dual Phase Inorganic Membrane for High Temperature Carbon Dioxide Separation - *Jerry Y.S. Lin*, University of Cincinnati

Use of Molecular Modeling to Determine the Interaction and Competition of Gases Within Coal for Carbon Dioxide Sequestration - *Jeffrey F. Evanseck*, Duquesne University

Improved Catalyst for Heavy Oil Upgrading Based on Zeolilty Y Nanoparticles Encapsulated in Stable Nanoporous Host - *Conrad Ingram*, Clark Atlanta University

Synthesis Characterization of CO-and H_2S - Tolerant Electrocatalysts for PEM Fuel Cell - *Shamsuddin Ilias*, North Carolina A & T State University

Investigation of Phase and Emulsion Behavior, Surfactant Retention, and Condensate/Water/Ethanol Mixture - *Ramanathan Sampath*, Morehouse College

Innovative Instrumentation and Analysis of the Temperature Measurement for High Temperature Gasification - *Seong W. Lee*, Morgan State University

Carbon Dioxide Separation by Phase Enhanced Absorption - *Liang Hu & Adeyinka Adeyiga*, Hampton University

Simulation Modeling of an Enhanced Low-Emission Swirl-Cascade Burner - *Ala Qubbaj*, University of Texas, Pan American